



Title: Devices and Methods of Detecting Movement Between Media and Probe  
Tip in a Probe Data Storage System  
Application No.: 09/465,592  
Inventors: Culver et al.  
Filing date: Dec. 17, 1999

Attorney: Michael Robbins  
Docket No.: NANO-01000US0  
REPLACEMENT SHEET

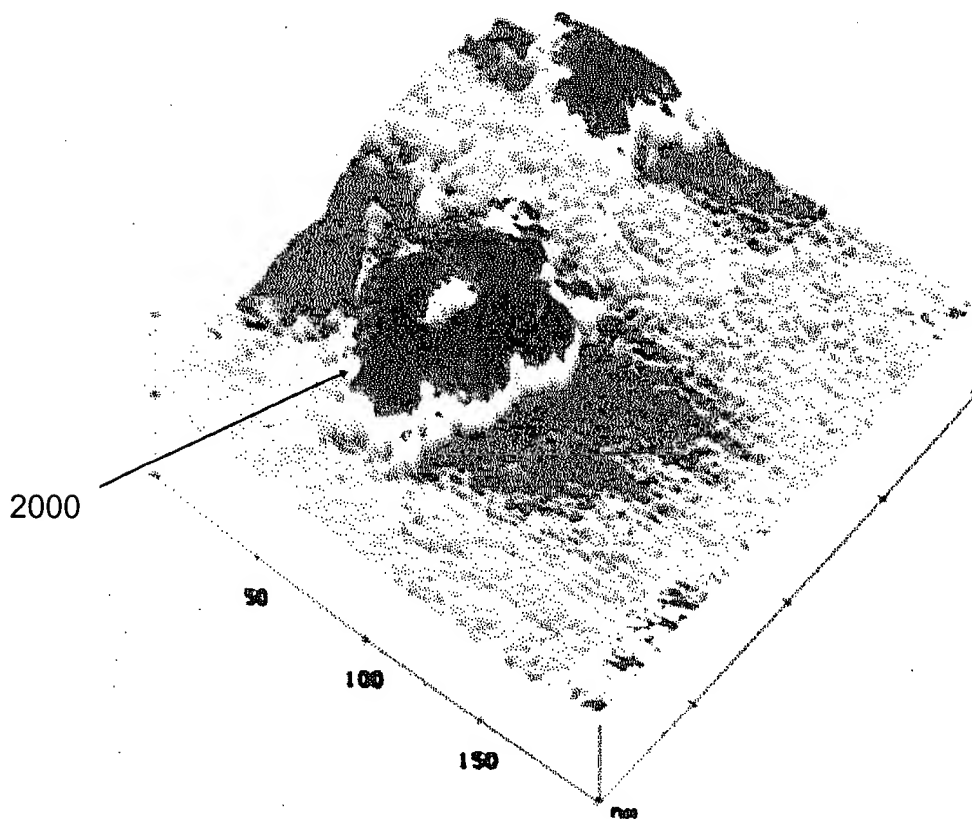


Figure 20

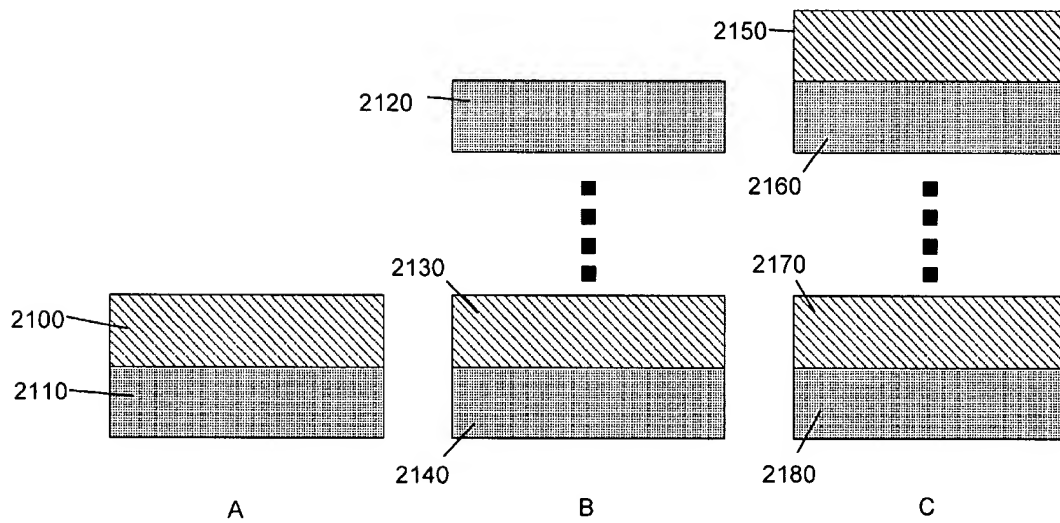


Figure 21

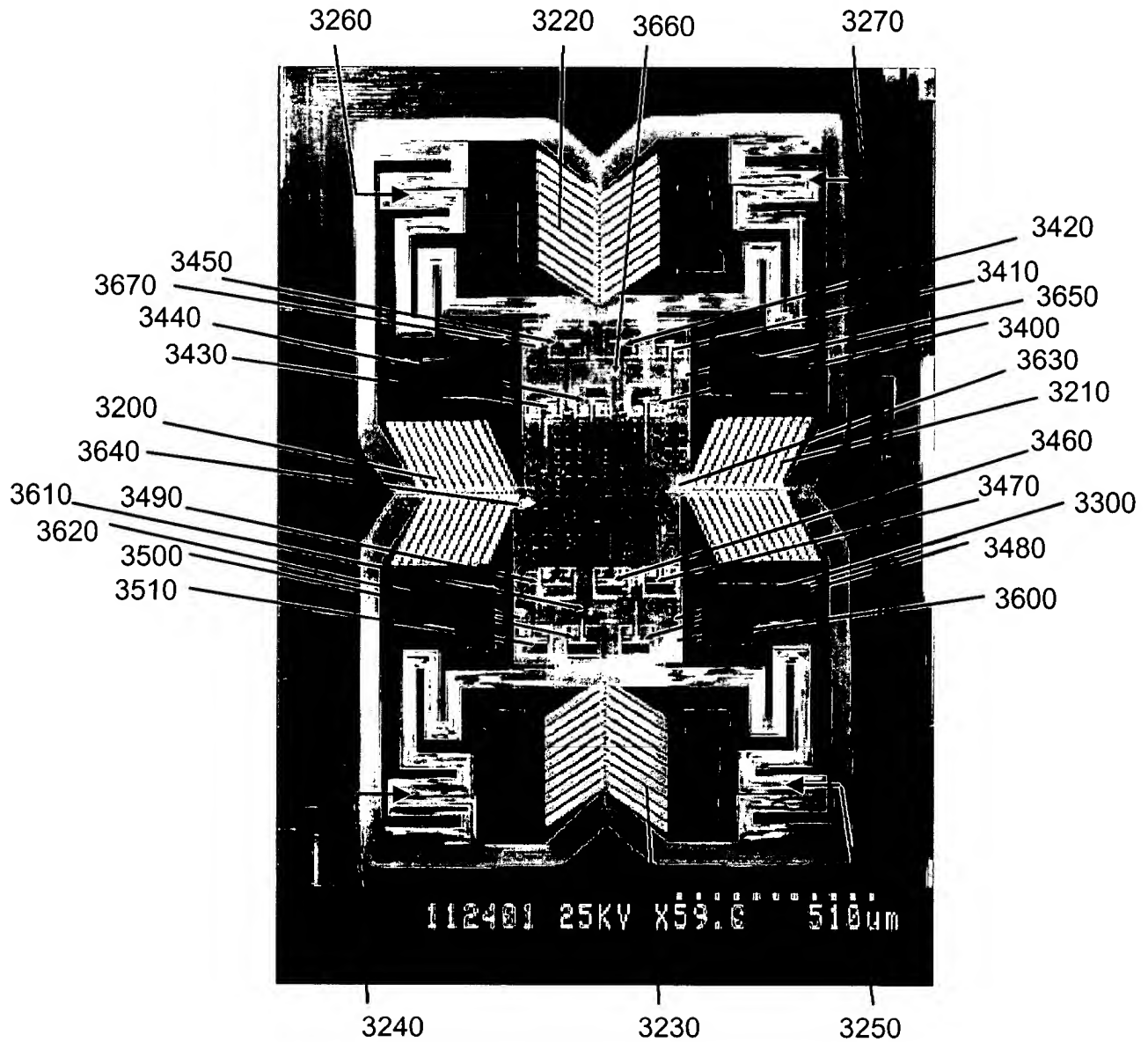


Figure 30

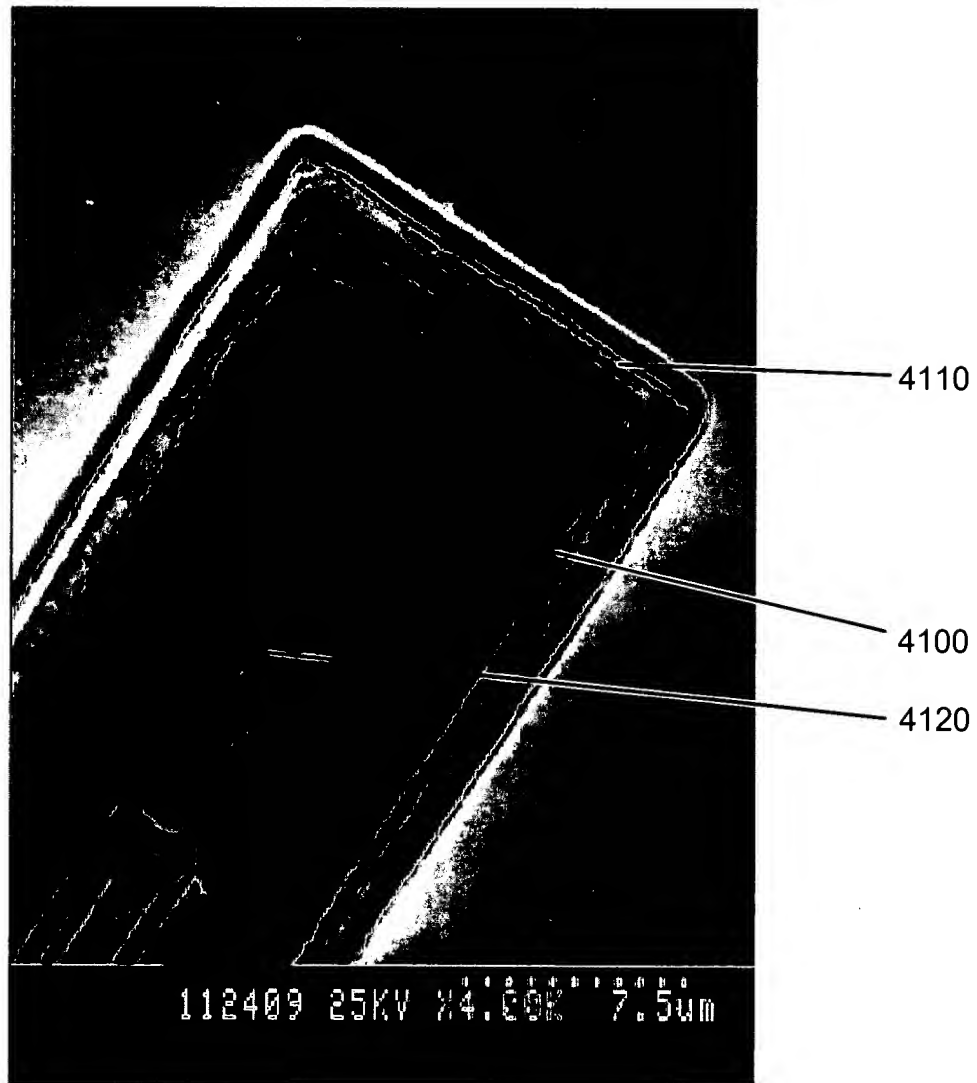


Figure 31

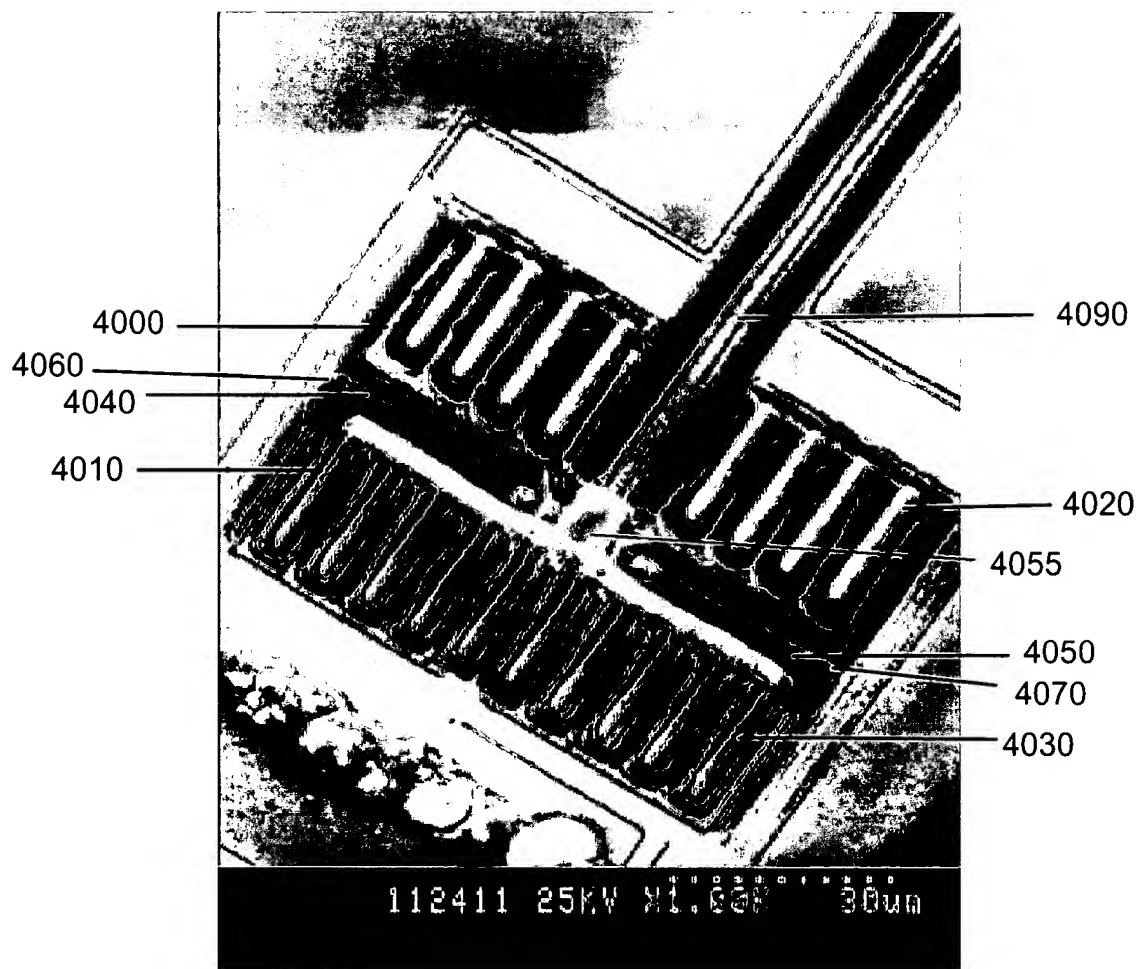


Figure 32

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Figure 33

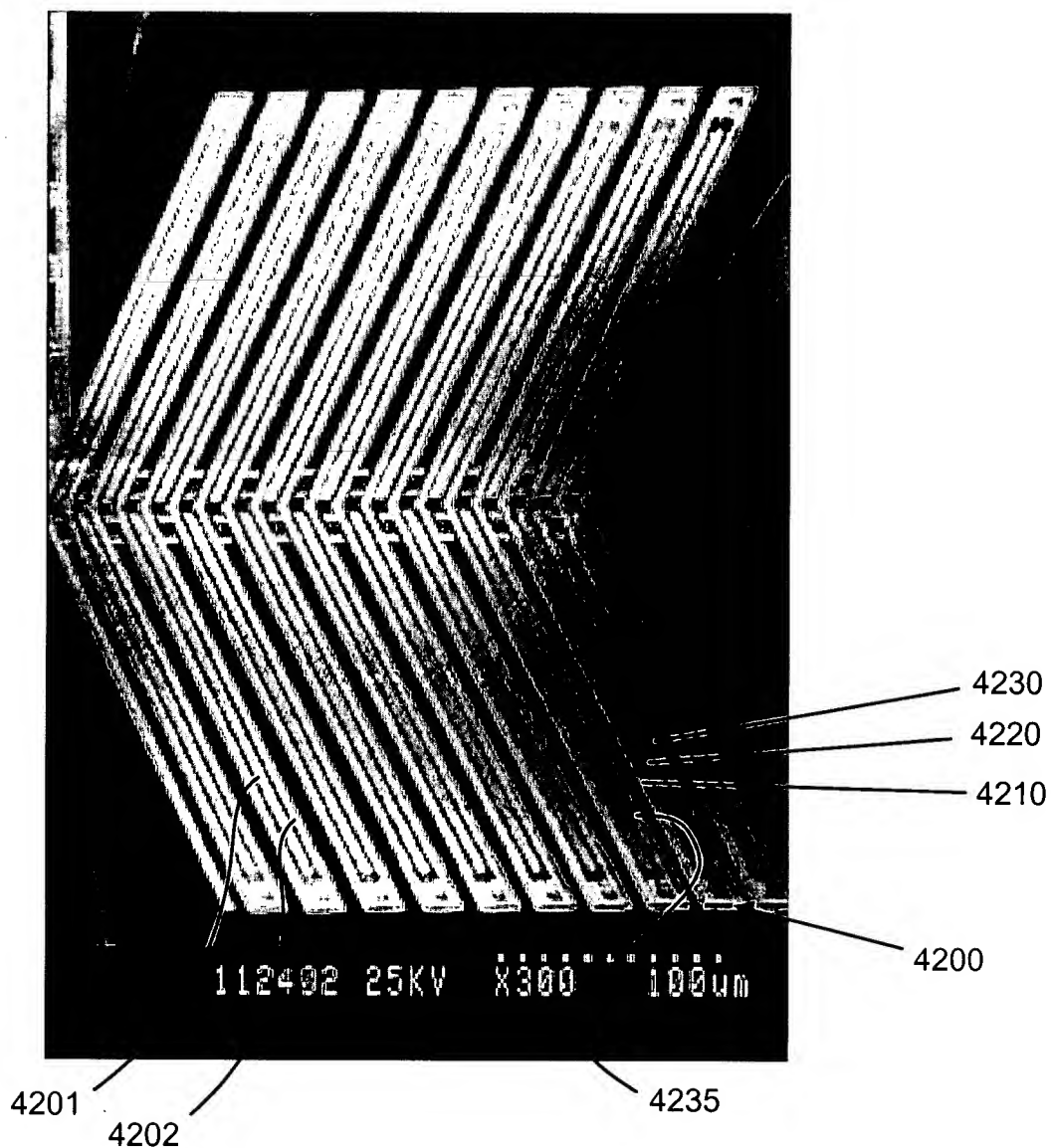


Figure 34A

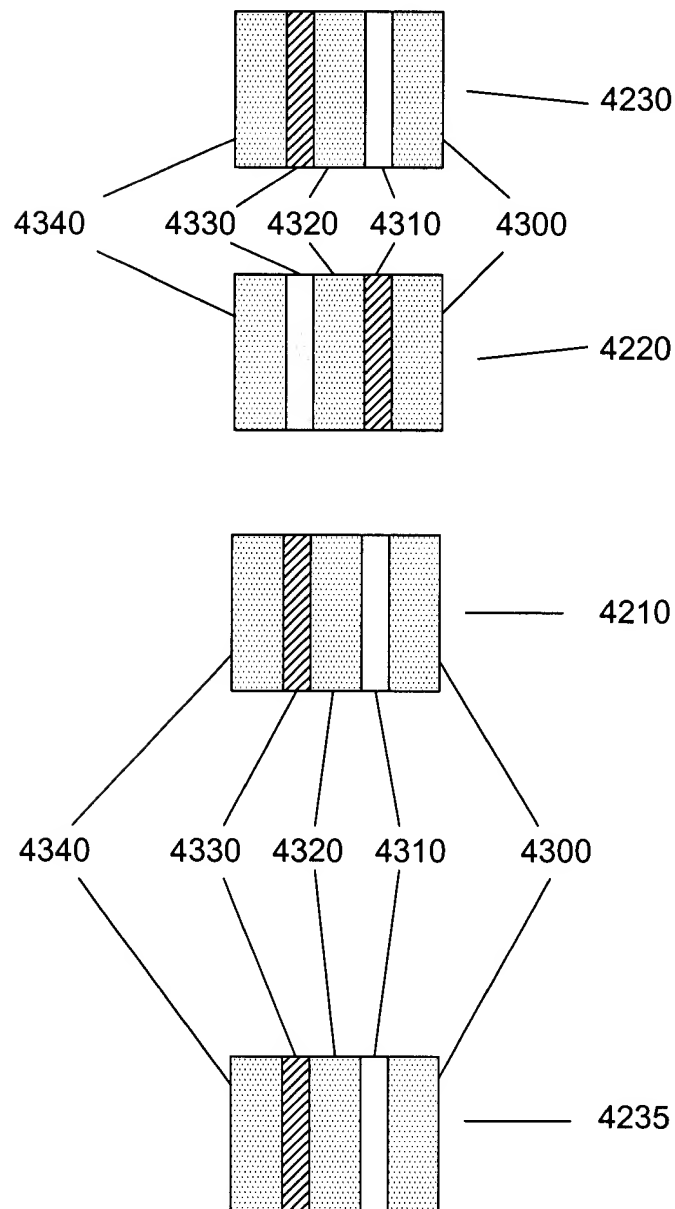


Figure 34B



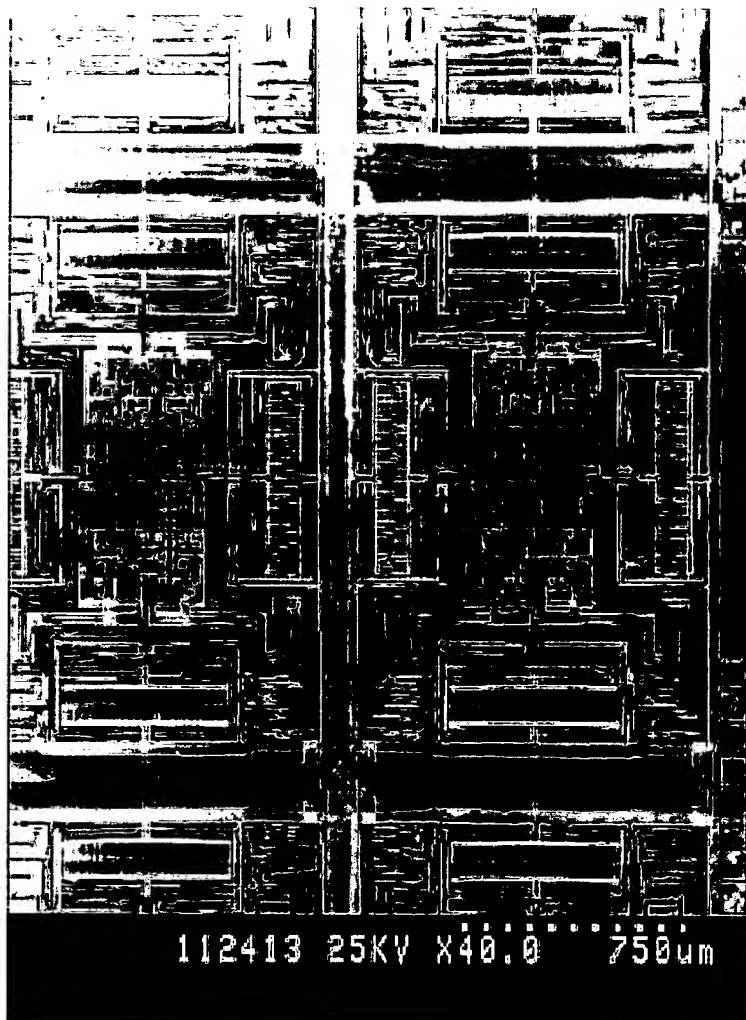


Figure 35

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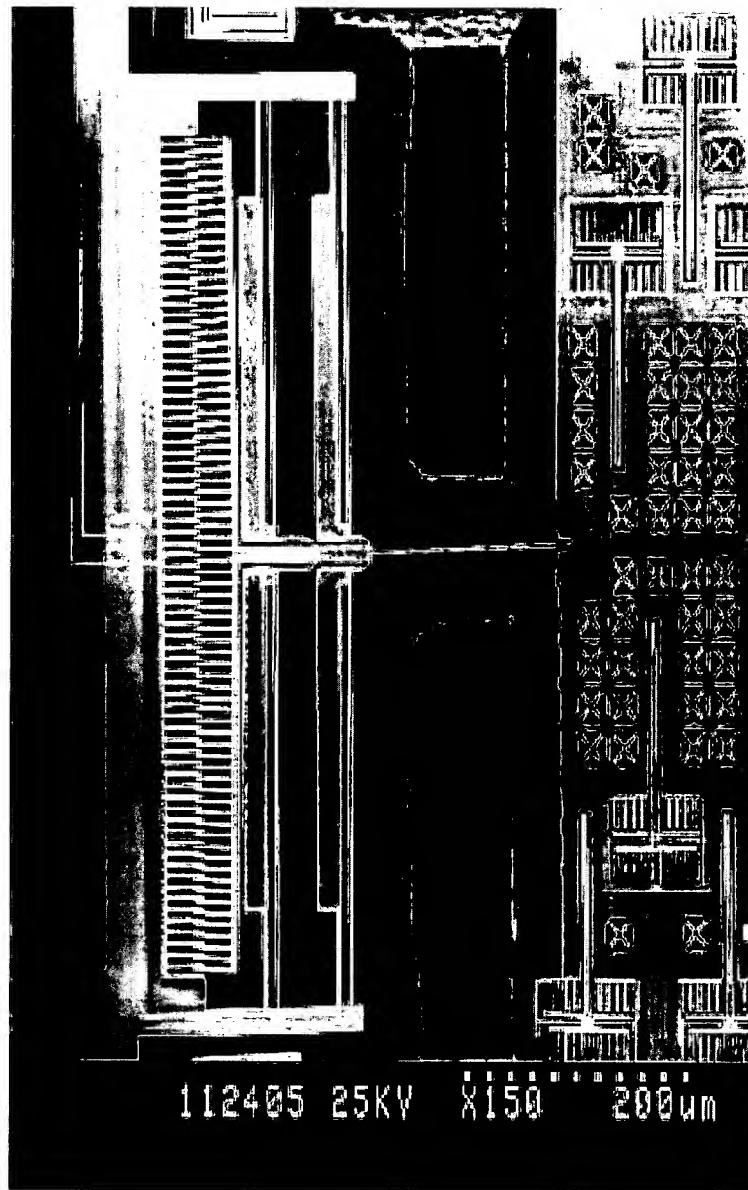


Figure 36



Figure 39

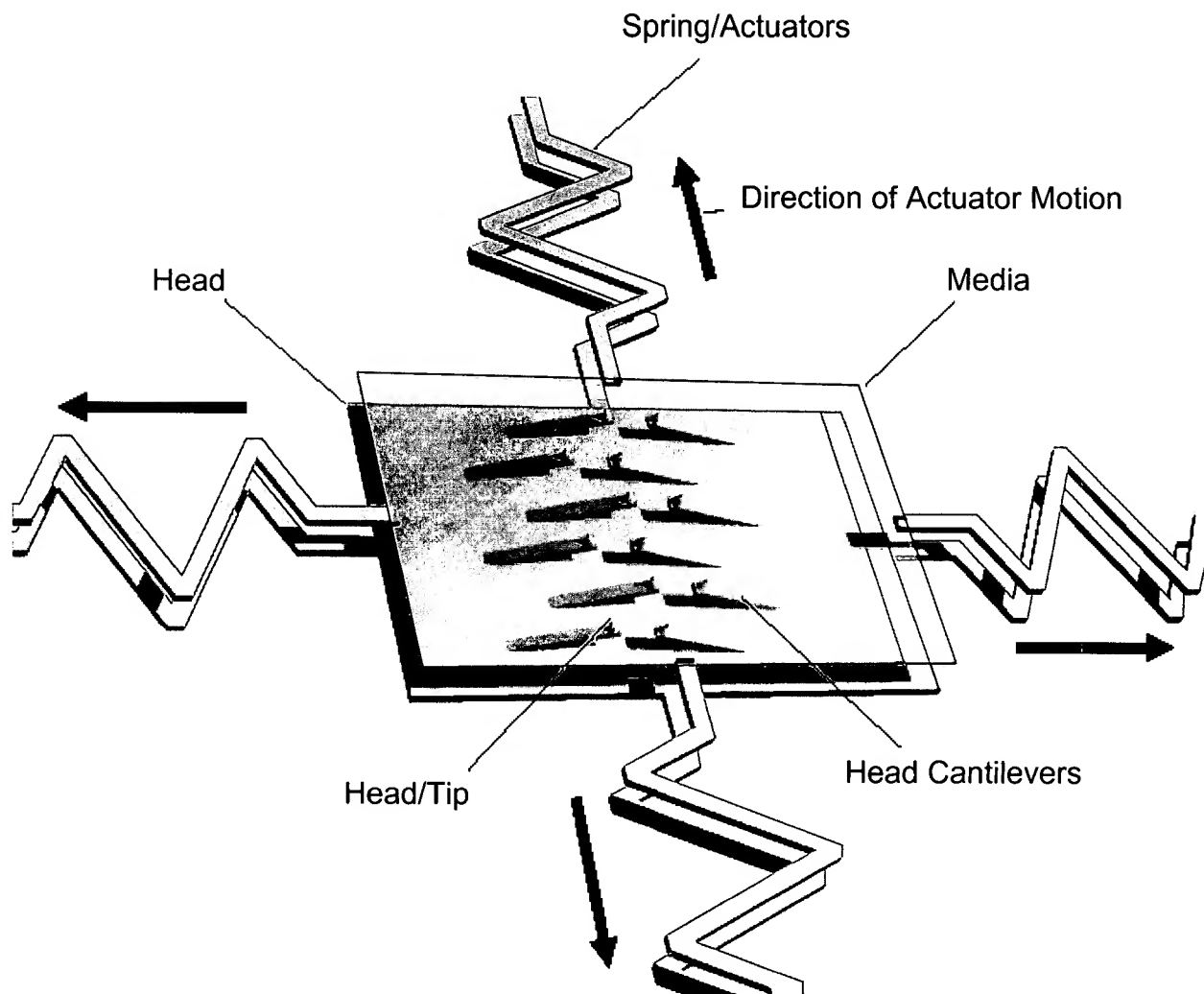
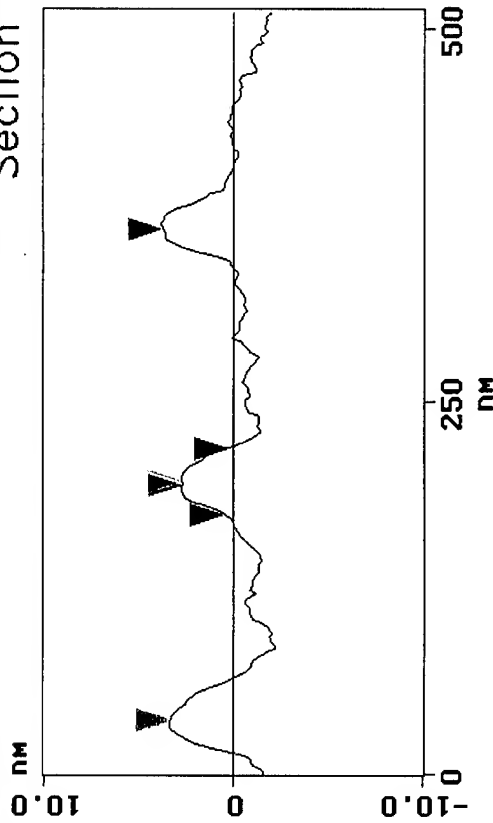


Figure 41

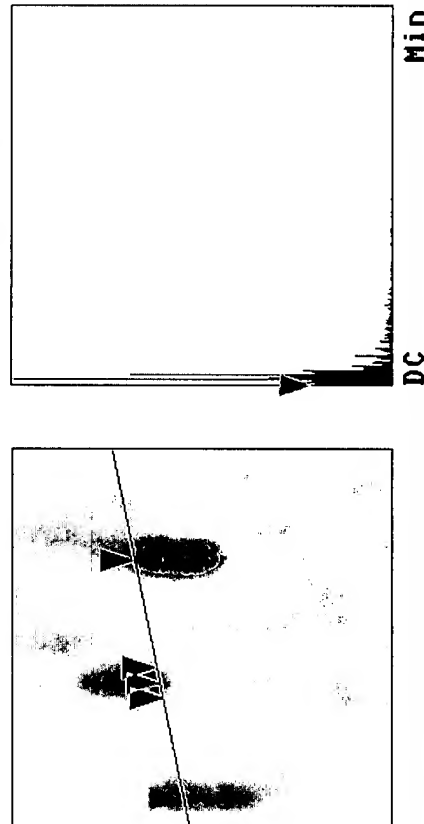
Cursor Marker Spectrum Zoom Center Line Offset Clear

## Section Analysis



L	43.389 nm
RMS	0.782 nm
1c	DC
Ra(1c)	0.622 nm
Rmax	2.404 nm
Rz	2.404 nm
Rz Cnt	2

## Spectrum



ge2x.005

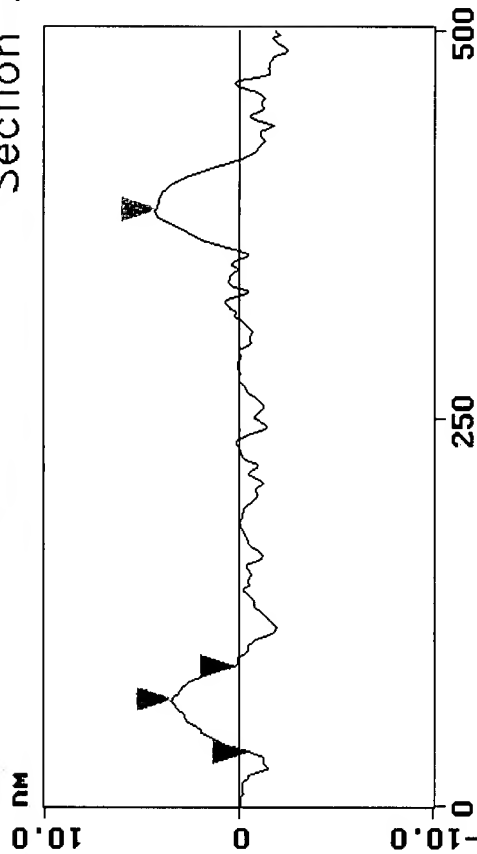
Surface distance	160.66 nm
Horiz distance(L)	159.75 nm
Vert distance	0.566 nm
Angle	0.203 deg
Surface distance	170.78 nm
Horiz distance	169.61 nm
Vert distance	1.092 nm
Angle	0.369 deg
Surface distance	43.825 nm
Horiz distance	43.389 nm
Vert distance	0.094 nm
Angle	0.124 deg
Spectral period	DC
Spectral freq	0 Hz
Spectral RMS amp	0.224 nm

Cursor: fixed Zoom: 2:1 Cen line: off offset: off

Figure 42A

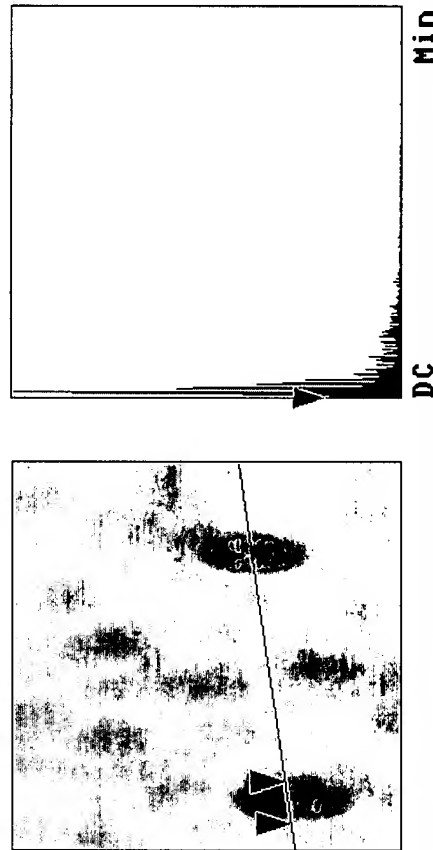
Cursor Marker Spectrum Zoom Center Line Offset Clear

## Section Analysis



L	54.688	nm
RMS	1.074	nm
1c	DC	
Ra(1c)	0.786	nm
Rmax	3.790	nm
Rz	3.695	nm
Rz Cnt	2	

Surface distance	318.96	nm
Horiz distance(L)	316.41	nm
Vert distance	0.760	nm
Angle	0.138	deg
Surface distance	55.387	nm
Horiz distance	54.688	nm
Vert distance	0.591	nm
Angle	0.619	deg
Surface distance		
Horiz distance		
Vert distance		
Angle		
Spectral period	DC	
Spectral freq	0	Hz
Spectral RMS amp	0.165	nm



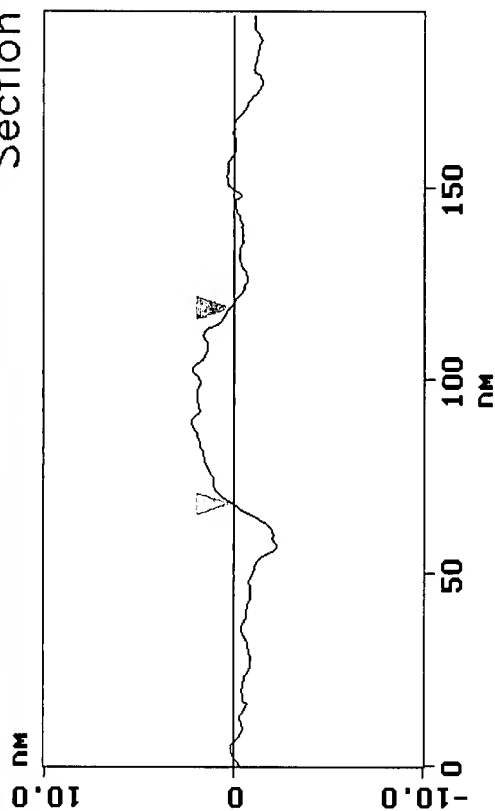
ge2x.006

Cursor: fixed Zoom: 2:1 Cen line: off offset: off

Figure 42B

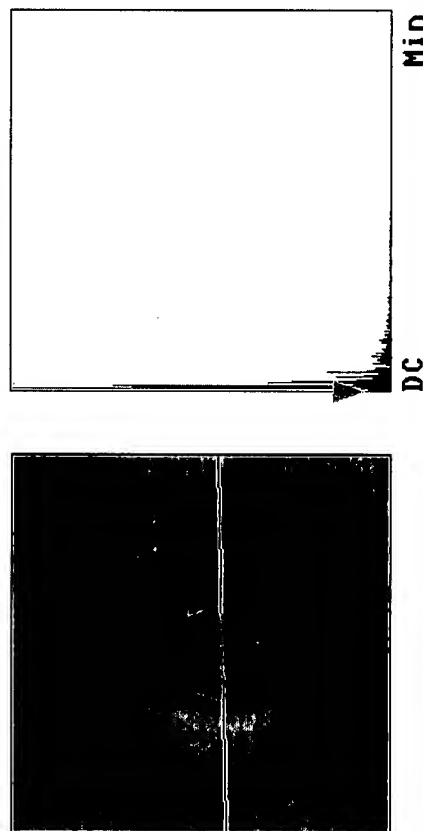
Cursor Marker Spectrum Zoom Center Line Offset Clear

## Section Analysis



L	50.453 nm
RMS	0.537 nm
1c	DC
Ra(1c)	0.417 nm
Rmax	2.098 nm
Rz	1.724 nm
Rz Cnt	4

## Spectrum



ge2x.008

Surface distance	51.018 nm
Horiz distance(L)	50.453 nm
Vert distance	0.0003 nm
Angle	0.0004 deg
Surface distance	
Horiz distance	
Vert distance	
Angle	
Surface distance	
Horiz distance	
Vert distance	
Angle	
Spectral period	DC
Spectral freq	0 Hz
Spectral RMS amp	0.043 nm

Cursor: fixed Zoom: 2:1 Cen line: off Offset: off

Figure 42C

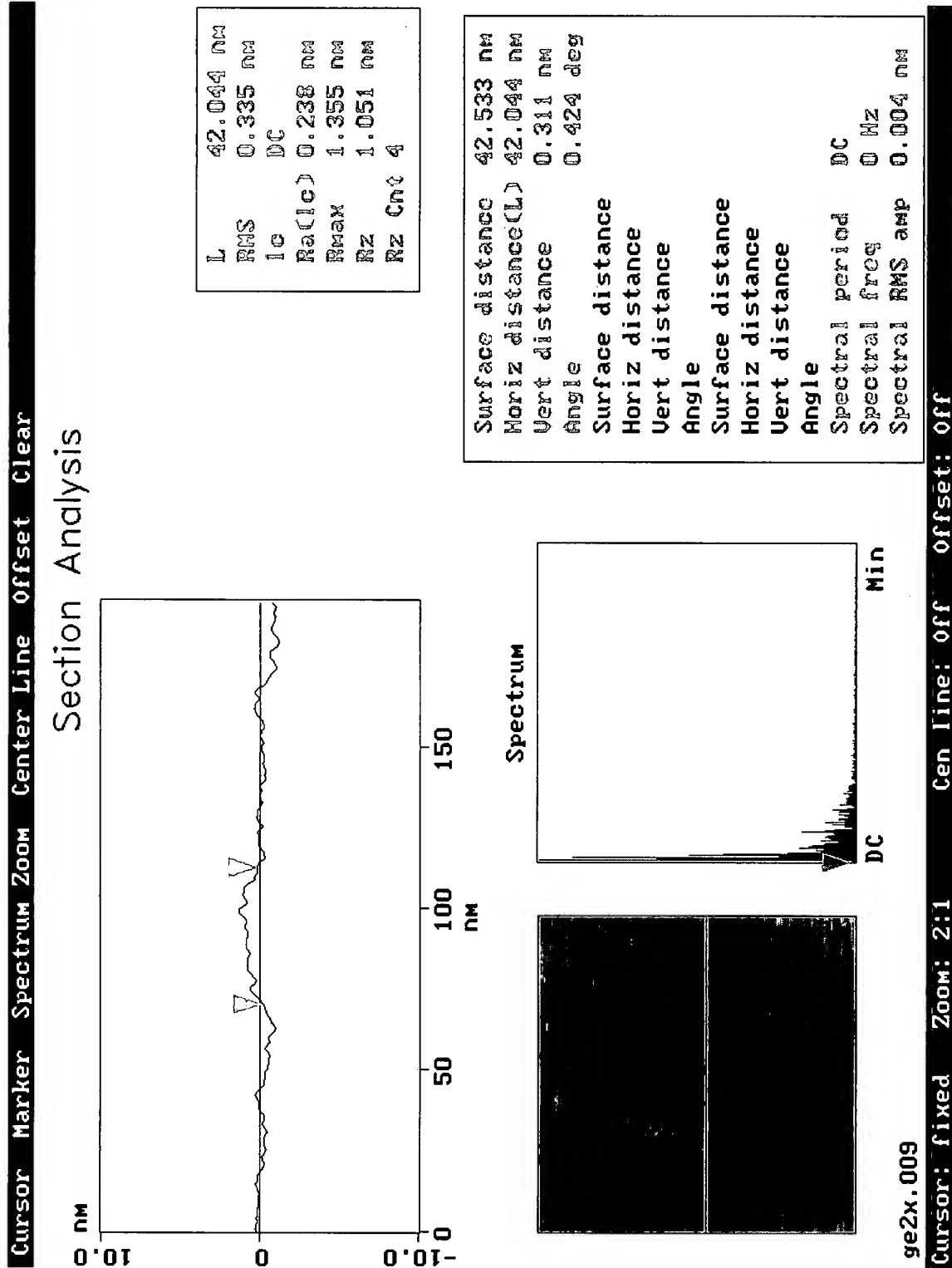
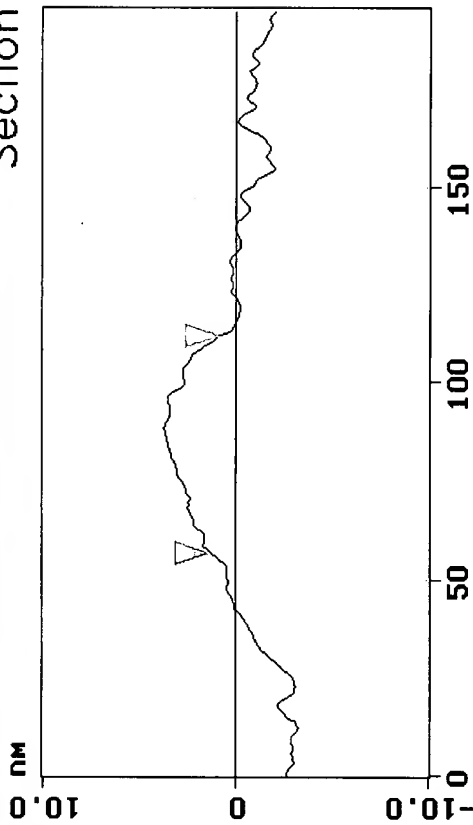


Figure 42D



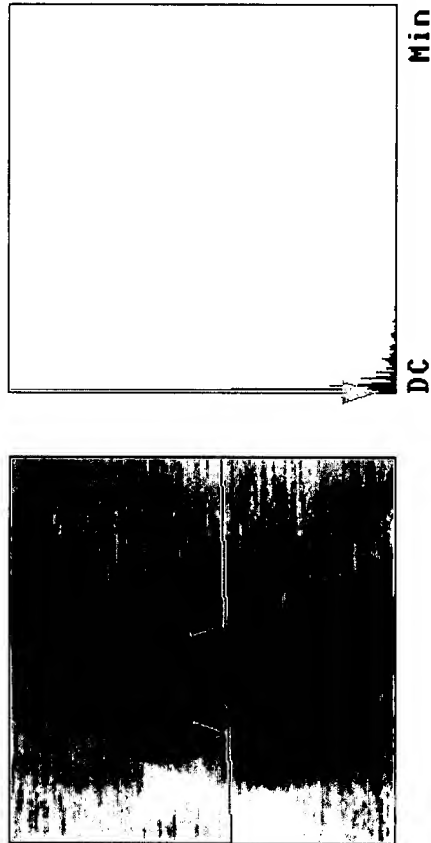
Cursor Marker Spectrum Zoom Center Line Offset Clear

## Section Analysis



L	55.039 nm
RMS	0.747 nm
lc	DC
Ra(Lc)	0.587 nm
Rmax	3.081 nm
Rz	2.117 nm
Rz Cnt	4

## Spectrum



ge2x.010

Surface distance	55.739 nm
Horiz distance(L)	55.039 nm
Vert distance	0.407 nm
Angle	0.423 deg
Surface distance	
Horiz distance	
Vert distance	
Angle	
Surface distance	
Horiz distance	
Vert distance	
Angle	
Spectral period	DC
Spectral freq	0 Hz
Spectral RMS amp	0.076 nm

Cursor: fixed Zoom: 2:1 Cen line: off Offset: off

Figure 42E

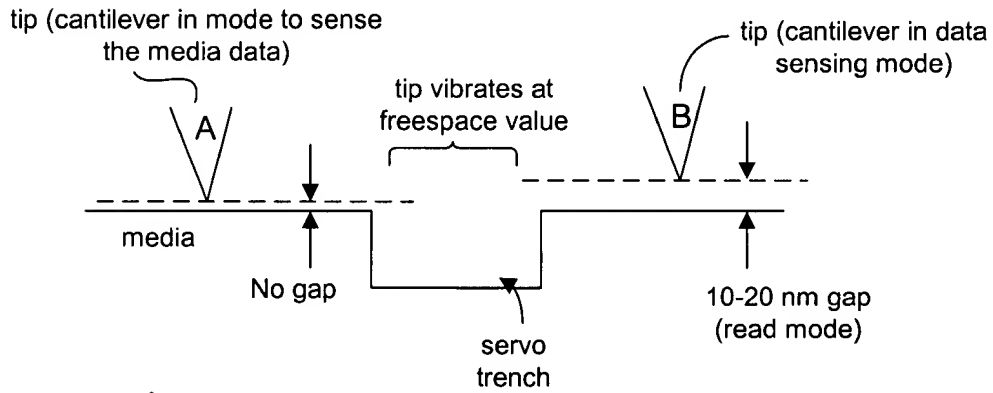


Figure 44

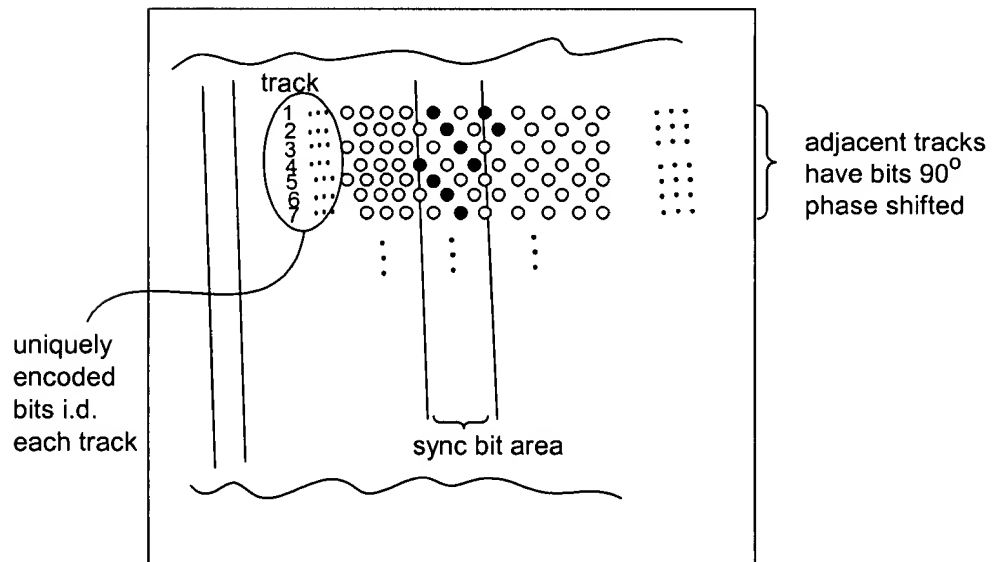


Figure 43

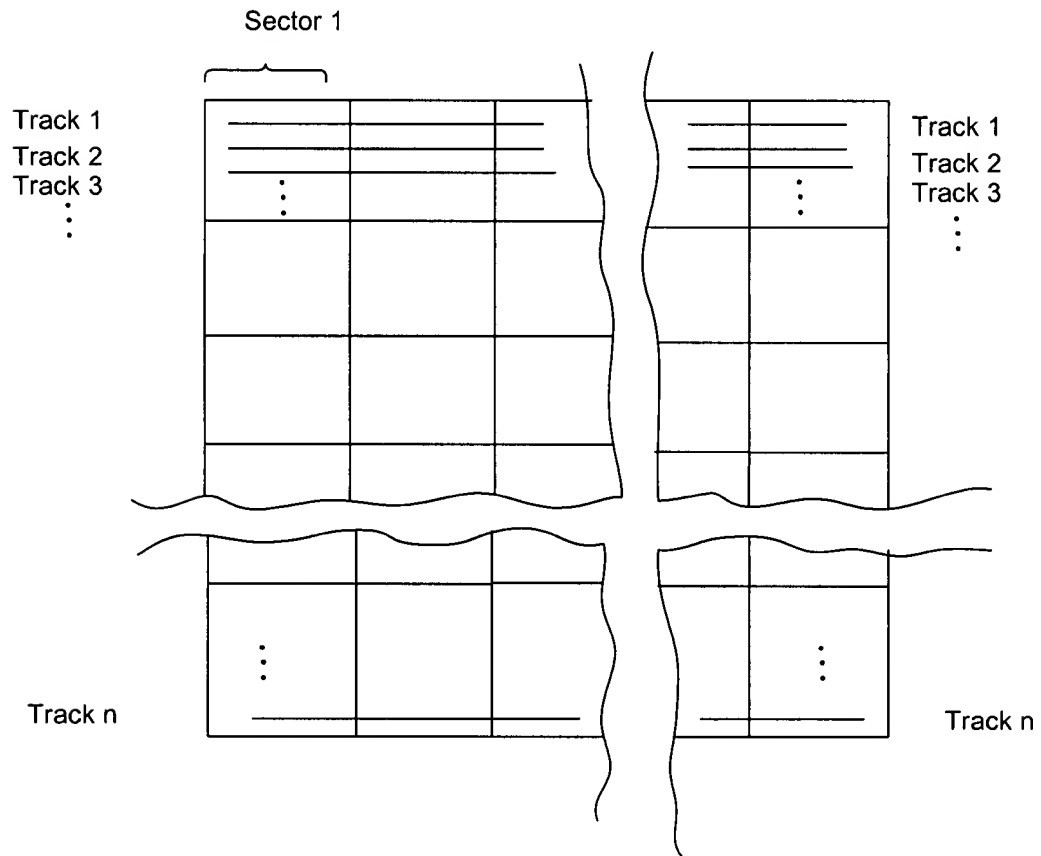


Figure 45

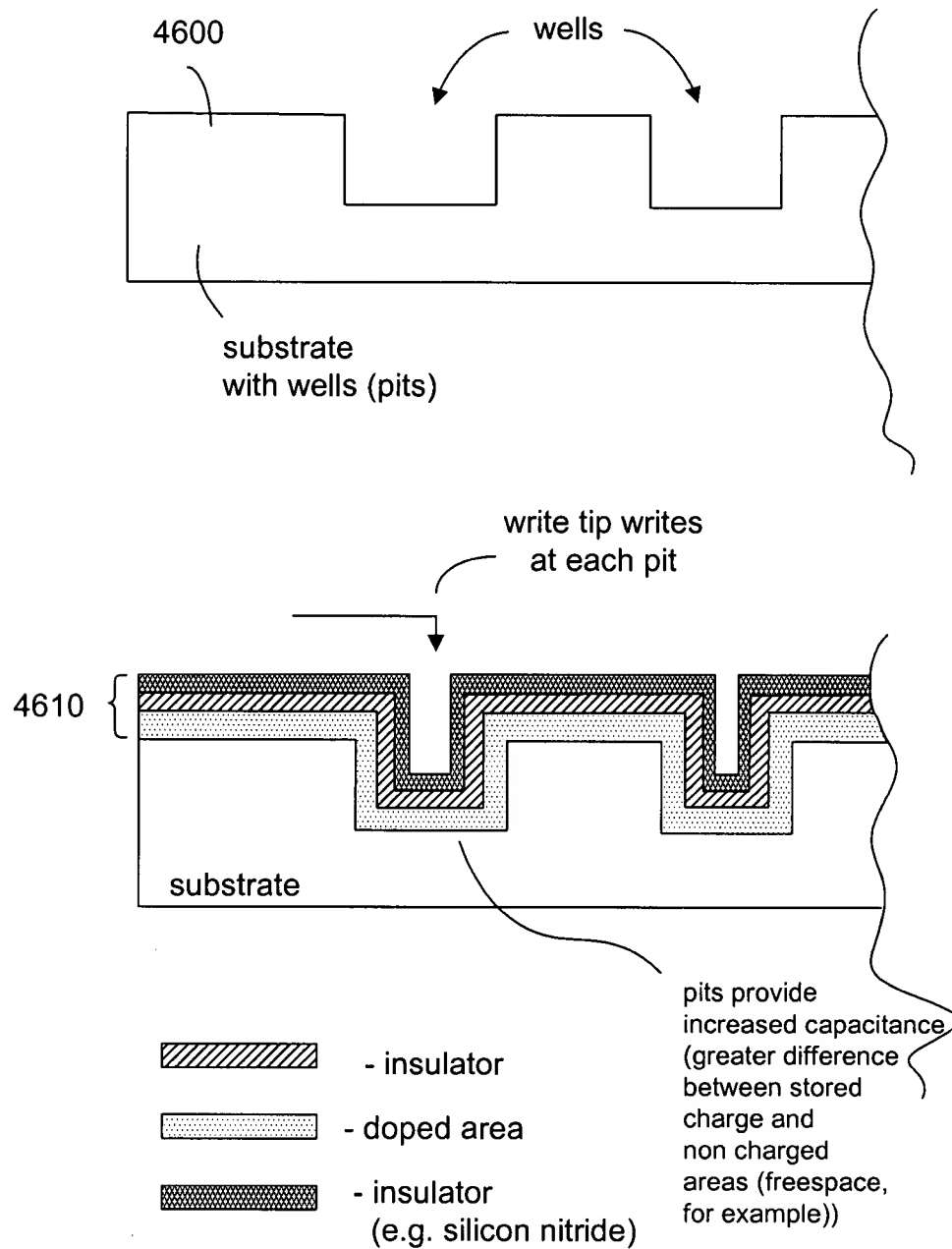


Figure 46

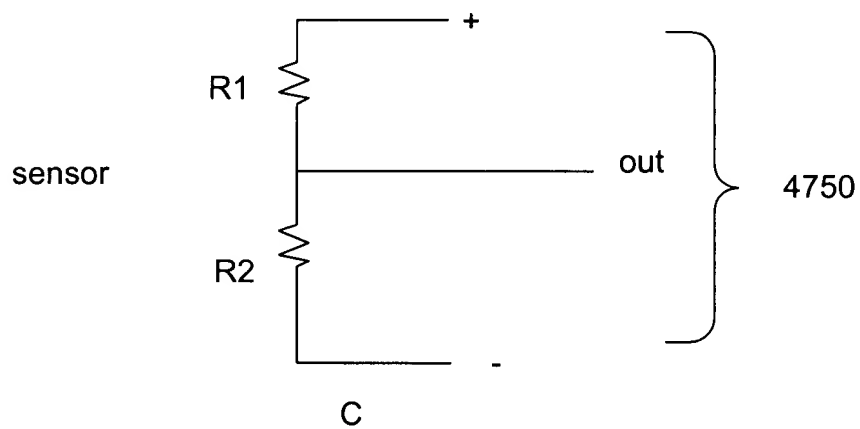
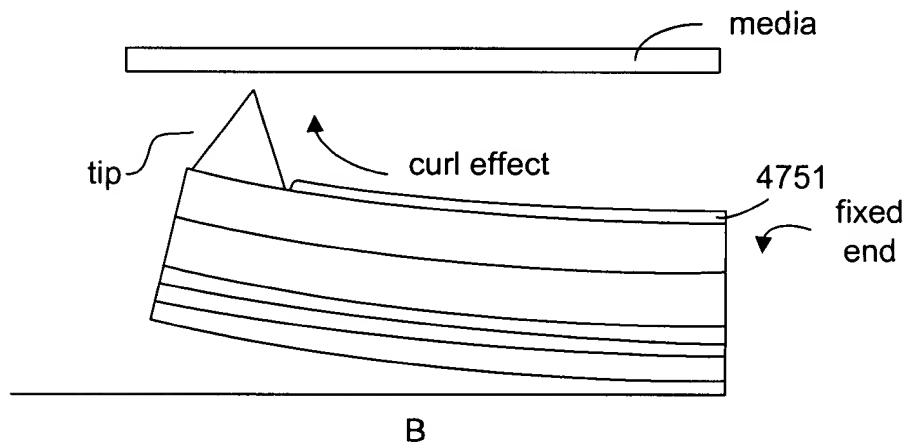
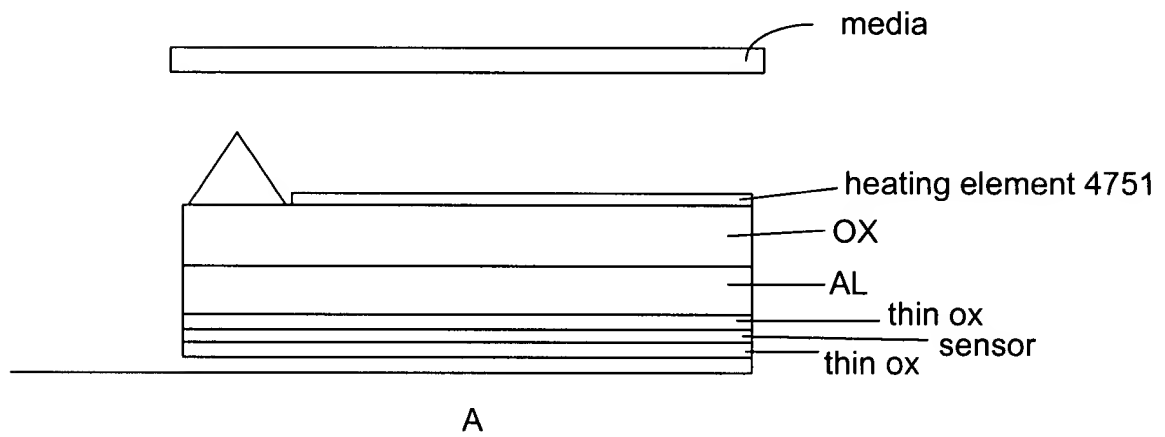


Figure 47

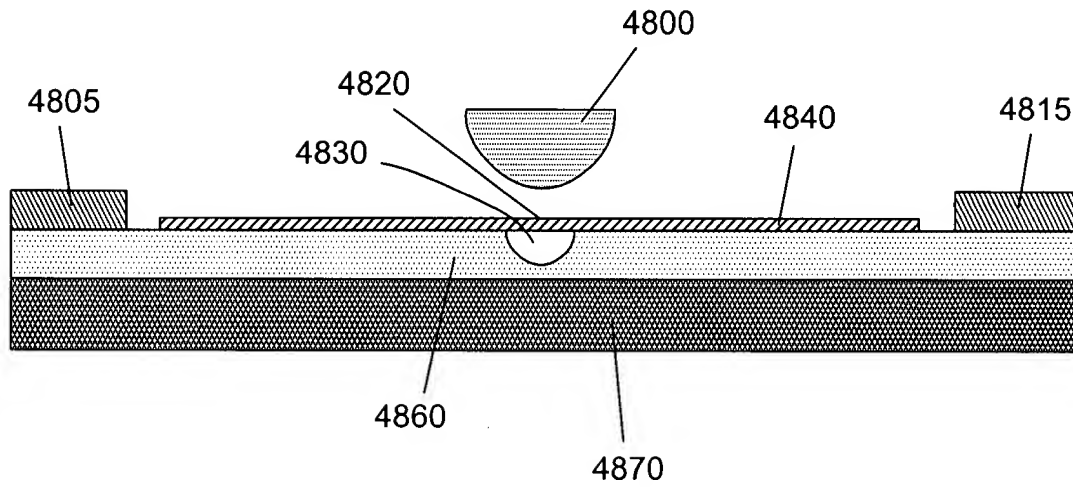


Figure 48

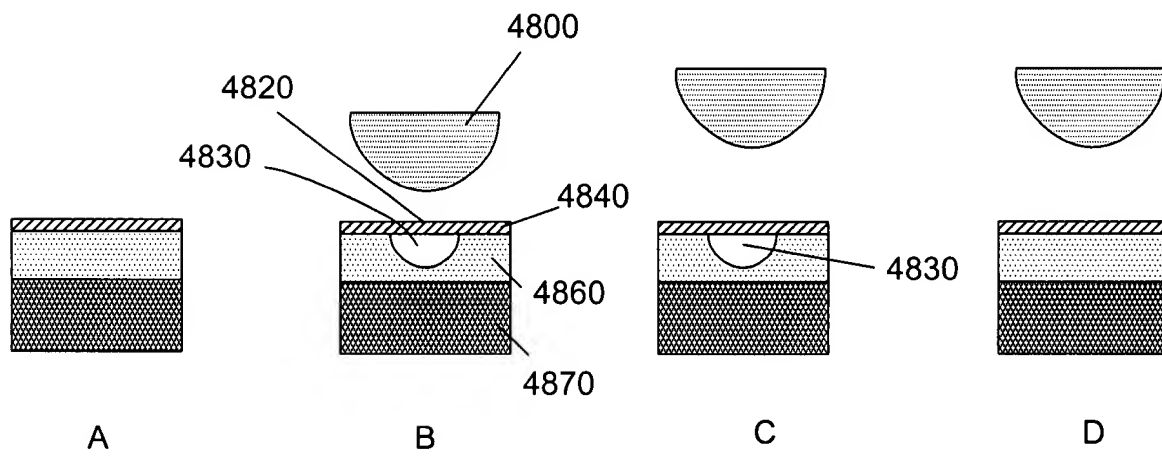


Figure 49

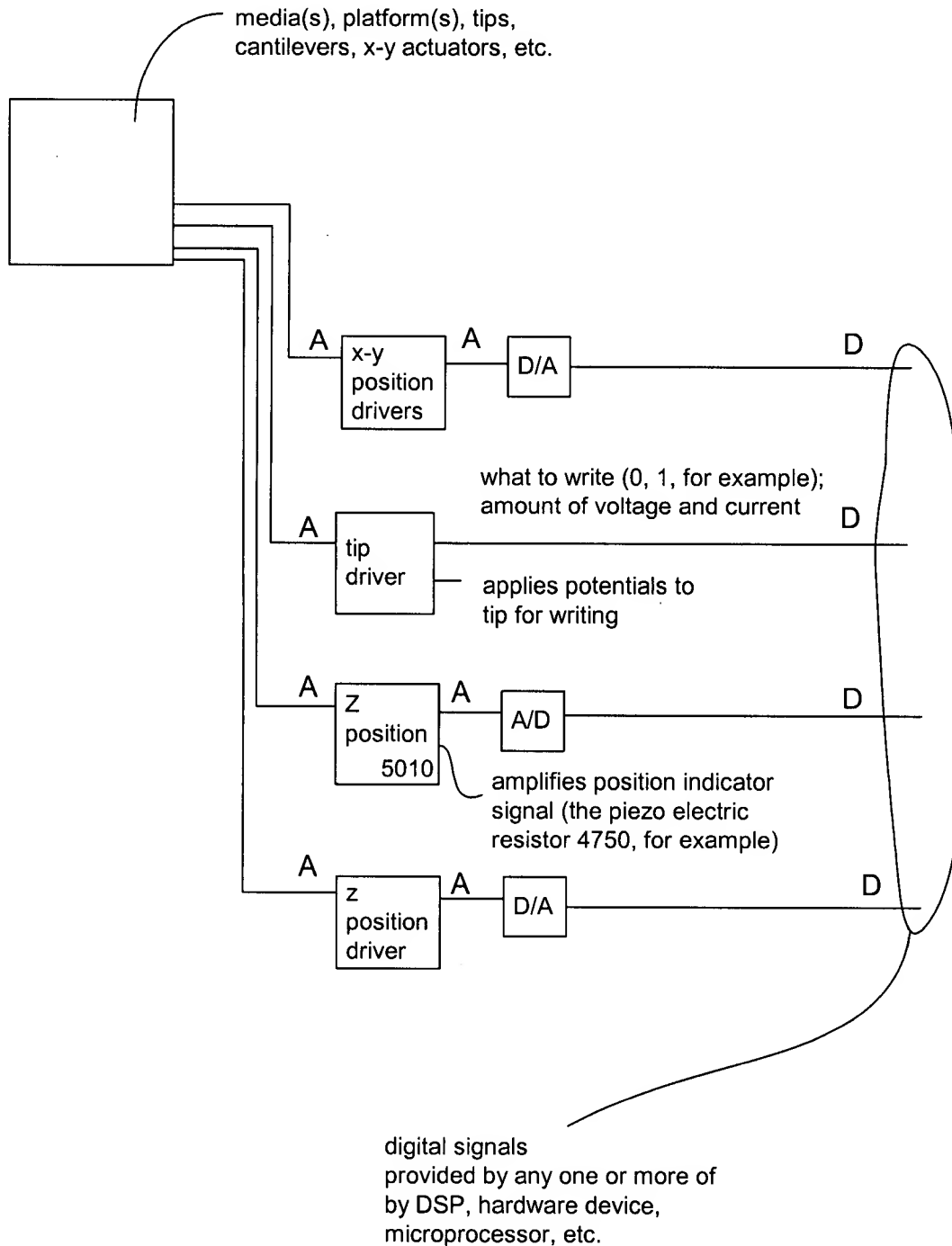


Figure 50